ENGINEERING
TOMORROW

User Manual

DP2xx series – EIC Engine Information Center

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EIC-Engine Information Center – DP2xx

Before You Start

Thank you for purchasing the Danfoss DP2xx Series Graphical Terminal. This package contains the following items:

- One (1) DP2xx Series Graphical Terminal
- One (1) Panel Seal Gasket
- One (1) Mounting Bracket
- Four (4) Bracket Mounting Screws
- One (1) DP2xx Series Graphical Terminals User Manual

Please ensure all parts are included prior to use.

The Engine Information Center (EIC)

The DP2xx Series Graphical Terminal comes installed with the powerful and flexible Danfoss Engine Information Center (EIC) J1939 engine monitor software application. Use the application to customize the look and feel of your individual engine monitoring needs by creating and controlling analog and digital display information in the screen configurations that work best for your performance requirements.

Navigate through diagnostic information and configuration screens with ease by using the four context-dependent soft keys located at the front of the display. Choose from 50 different monitoring parameter profiles to customize the DP2xx terminal.

Up to four signals can be monitored on each screen. Use the Engine Information Center software to configure the DP2xx for alarms and alerts.

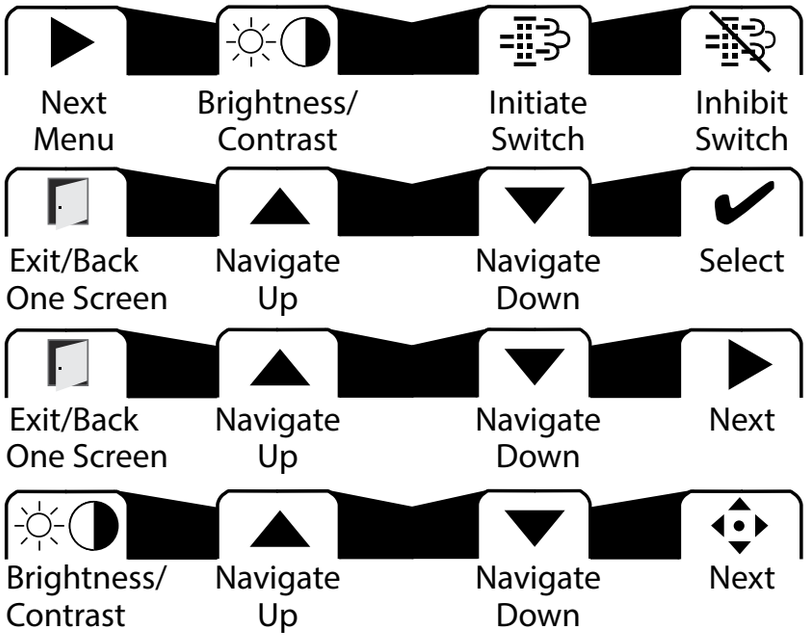
Brightness/Contrast Adjustment

Adjust brightness and contrast levels by pressing soft key 2. This will display the brightness and contrast soft key bar. The bar will disappear after 3 seconds of inactivity.

Navigation Using Soft Keys

The DP2xx Series Graphical Terminal is controlled by navigation through a set of four soft keys located at the lower front of the display. The keys are context dependent. Soft key selection options are displayed above each key and are dependent on the current navigation location within the engine monitor software program. As a general rule, the far right soft key is the selector button and the far left soft key is the step back one screen key. To optimize full screen use, the on-screen selections are not displayed when not in use. Press any soft key to display current selection options. The selection options will be displayed for three seconds.

Navigation Using Soft Keys



Screen Navigation

Brightness/Contrast	Press to access brightness and contrast settings
Navigate Up	Press up to move up through menu items or screens
Navigate Down	Press up to move down through menu items or screens
Main Menu	Press to go to Main Menu screen
Exit/Back one screen	Press to go back one screen
Select	Press to accept selection
Next	Press to select next digit or screen element
Initiate Switch	Press to force regeneration of particulate filter
Inhibit Switch	Press to inhibit particulate filter regeneration
Previous	Press to navigate to previous menu

EIC DP2xx Force and Inhibit Regeneration software function description

While the unit is displaying one of the Monitor Screens, pressing any soft key will show the available Navigation actions in an action menu. There are two separate action menus on this level; the first one to appear contains the following actions (from left to right):

- Next Menu
- Screen Brightness/Contrast
- Initiate Switch (Force Regeneration)
- Inhibit Switch (Inhibit Regeneration)

Selecting 'Next Menu' will display the second action menu with actions unrelated to the function described herein. Pressing it again will show the first set of actions once more. If no soft keys are pressed and released for 2.5 seconds while the action menu is shown the menu will disappear and the actions are no longer available. Pressing (and releasing) any soft key will activate the first menu once more.

- **Force Regeneration action**
  If the user selects the Force Regeneration action while the action menu is being displayed; bit 2 (out of 0-7) in byte 5 (out of 0-7) will be set to 1 (true) in the J1939 message PGN 57344 bound for the engine. This change prompts the message to be transmitted. The bit will stay like this for the duration of the soft key press or for the 2.5 second countdown to soft key inactivity, whichever occurs first. The bit is then reset to 0 (false).

  The soft key press also prompts the display to show a popup lasting for 5 seconds. This popup simply says “Regeneration Forced”. If the display does not receive an acknowledgement from the engine on the change to message PGN 57344 the last half of the popup will say “No Engine Signal”. This acknowledgement is the command that lights up the Forced Regeneration LED on the display unit housing.

- **Inhibit Regeneration action**
  If the user instead selects the Inhibit Regeneration action while the action menu is being displayed the same function as described above will be executed, with some differences;
  – Bit 0 (out of 0-7) in byte 5 (out of 0-7) is set to 1 (true) instead.
  – The popup says “Regeneration Inhibit” instead.
  – The acknowledgement lights up the Regeneration Inhibit LED instead.

Main Menu

Start Menu

Start Menu – Main Menu
The Main Menu screen is the starting point for configuring the DP2xx Series Graphical Terminal.

Main Menu

Basic Setup	Use to set Time/Date, Language and Units
Diagnostics	Use to set System Info, access Fault Log and J1939 lists.
Screen Setup	Use to set Parameters, choose number of screens and select screen. (PIN protected)
System Setup	Use to reset trip and default settings, access CAN information, select display settings and set PIN information. (PIN protected)

Main Menu

Basic Setup

Overview

Use the Basic setup screen to set time, language and display units for the DP2xx series terminal.

Basic Setup

Time/Date	Use Time/Date to set, date and display style for time and date information.
Language	Use Language to set the system language. The default language is English.
Units	Use Units to set speed, distance, pressure, volume, temperature, fuel rate and economy settings.

Main Menu
Basic Setup

Time/Date
Use Time/Date screen to set Time, Date, calendar style and time style. Use up, down select and next soft keys to navigate.

Language
Use Language screen to select program language. Languages available, English, French, German, Italian, Swedish and Spanish.
The default language setting is English.

Main Menu

Basic Setup

Units

Use the up, down, select and next soft keys to define unit measurements.

Unit Selection Options

Speed	km/h, mph
Distance	km, mi
Pressure	kPa, bar, lbs/sq in
Volume	l, gal, imp gal
Temperature	°C, °F
Fuel Economy	1/100 km, mpg, mpig
Fuel Rate	l/h, g/h, ig/h

Main Menu

Diagnostics

Overview

Use the Diagnostics screen to display current system information, view and monitor fault logs and display all J1939 devices connected to the graphical terminal.

Diagnostics

System Info	Selecting System Info will display hardware, software, system and node information for connected devices.
Fault Log	Use Fault Log to view and monitor current and previous fault information.
Device List	The Device List will list all currently connected J1939 devices.
Quick Data	Use Quick Data to set up a customized signal list that can be quickly scrolled through in one signal per page format.

Main Menu
Diagnostics

System Info
The system info screen displays the hardware system serial number, current software version, current system version and node number. Only information is displayed in the System Info window. No changes can be made.

Fault Log
Fault information is saved and stored to the fault log. Select either Active or Previous Faults to monitor fault activity. Select specific faults to list more information.

Main Menu
Diagnostics

Fault Log: Active and Previous Faults

Selecting Active Faults in the Fault Menu will display all active faults on the CAN network.

Selecting Previous Faults in the Fault Menu will display all previously active faults on the CAN network.

Main Menu
Diagnostics

Fault Pop-Up Alarms

When a fault is detected on the CAN network, a flashing red warning alarm will be activated and a fault information pop-up window will be displayed listing current fault information.
Warning lights will flash when a pop-up alarm occurs and will stay flashing until acknowledged.
Warning lights will remain lit until the fault is no longer on the CAN network.

Fault pop-up soft key actions

	Select to clear pop-up and return directly to previous display information
	Select to go to next fault information
	Select to go to previous pop- up information
	Select to clear pop-up and go to the current active fault complete information screen

Main Menu
Diagnostics

Fault Pop-Up Alarms

- Faults that have been acknowledged and are no longer active will be shown in the Currently Active Faults log in italics.
- Faults no longer active will also be displayed in the Previous Faults log.
- Pop-up fault alarms can be disabled by setting the Fault Pop-Up to off in the CAN section of the System Setup menu.

Main Menu
Diagnostics

Device List

The Device List page will list all J1939 devices and addresses that are currently being monitored on the network.

Main Menu
Diagnostics

Quick Data

The Quick Data function allows selected signals to be monitored in a scrollable single view display.

To select signals for display, press the far right soft key.

Quick Data softkey

Scroll through signal list using the up and down arrow soft keys and select/deselect signals for Quick View monitoring by pressing the far right (check mark) soft key. Signals selected for display will show an asterisks to the left of the signal name.

Main Menu

Screen Setup

Overview

Use Screen Setup to enter parameter settings, select number of signal screens and select individual screens for setup.

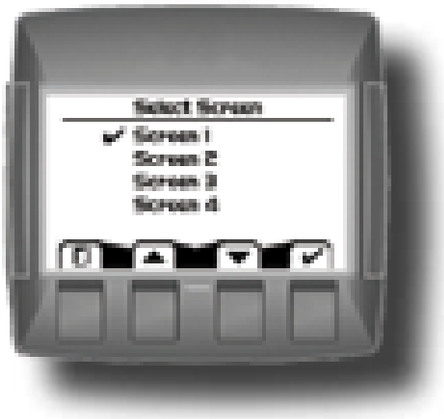
Screen Setup

Parameters	Set Parameters for RPM, Speed, Fuel, Wheel and Pulse/ Revolutions information.
Number of Screens	Select Number of Screens for information display. Select from 1 to 4 screens for display.
Select Screen	Use to Select Screen to set up signal information. Number of screens available are dependent on number of screens selected.

Main Menu
Screen Setup

Parameters
Define system parameter ranges for revolutions per minute, speed, fuel, wheel diameter and pulses per revolution display settings.

Number of Screens
Select number of screens for display. Choose from 1 to 4 screens. See page 22 for detailed screen set up tutorial.



Select Screen
Select screen to customize. See page 27 for detailed screen setup tutorial.

Main Menu

System Setup

Overview

Use System Setup to monitor and control application systems. Reset to default settings, make CAN selections, control display settings, set PIN configurations and reset trip functions.

System Setup

Reset Defaults	Select to reset all system information to the default settings status.
CAN	Select to customize CAN settings.
Display	Select to customize display settings.
PIN Setup	Use to set custom PIN settings.
Trip Reset	Select to reset all trip information.

Main Menu

System Setup

Reset Defaults

Select Reset Defaults to reset all EIC settings to original factory default settings.

CAN Settings

Use the CAN settings selection to make the following selections:

CAN Settings

Engine Address	Select engine address. Selection range is 0–253.
CAN	Select 1, 2 or 3 to determine how to interpret non-standard fault messages. Consult engine manufacturer for correct setting.
Fault Popup	Select on or off to enable or disable on screen popup messages.

Main Menu

System Setup

Display Setting

Startup Screen	Select to enable/disable logo display at startup
Buzzer Output	Select to enable/disable warning buzzer functionality.
Demo Mode	Select on/off to enable demonstration mode.

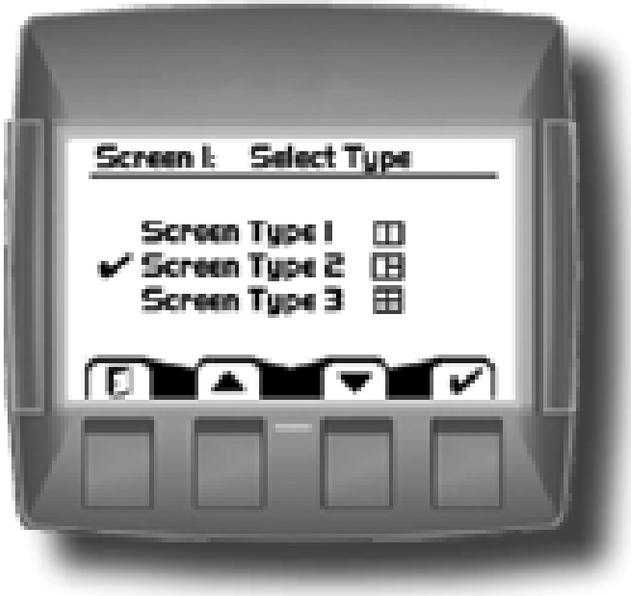
Main Menu
PIN Protection

Change PIN Code
To reduce the potential for errors, Screen Setup and System Setup menu options can only be accessed after entering a PIN code. The default code is 1-2-3-4. The PIN number can be changed by using PIN Setup located in the System Setup menu.

Trip Reset
Select Yes to reset all trip data.

Setup Options

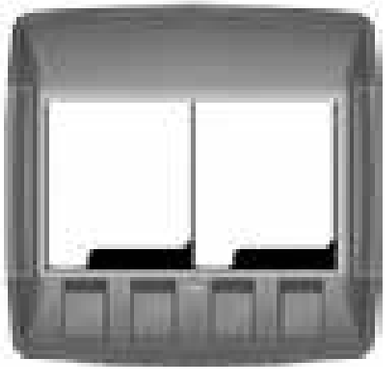
Selecting Screen Number and Types



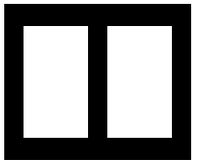
1. Select from one to four screens for signal monitoring.
Navigate to Main Menu>Screen Setup>Number of Screens.

2. Select screen type for each of the screens selected.
Navigate to Main Menu>Screen Setup>Select Screen.
Choose from three types of screen setups. Select screen type and press the far right soft key (check mark) to go to signal monitoring options.

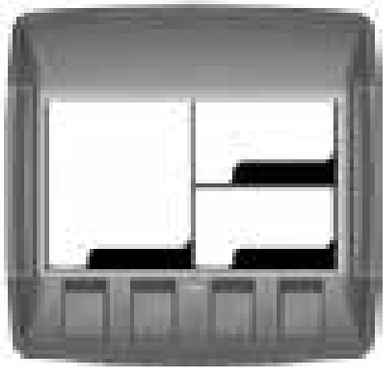
Setup Options
Screen Variants



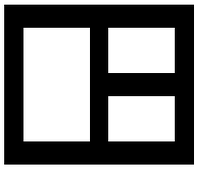
Screen Type 1



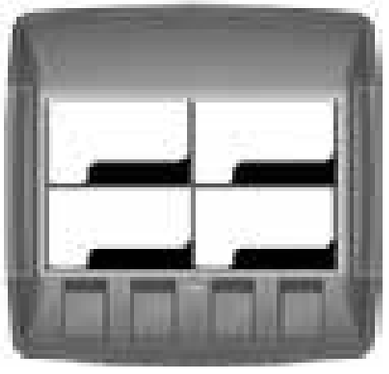
Type 1 is a two-up screen view with two signal capacity.



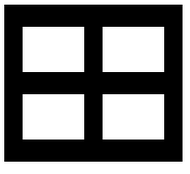
Screen Type 2



Type 2 is a three-up screen view with one large and two small signal display capacities.



Screen Type 3



Type 3 is a four-up display with four small signal display capacity.

Setup Options

Selecting J1939 Monitor Signals

3. After screen type selection, select signals to monitor. Use the up and down arrow soft keys to cycle through available signal selections.

4. After making a signal selection, press the right arrow (Next) soft key to go to the next selection area. Use the up, down arrow, next and select soft keys to select signal. Select the right arrow soft key to move to the next selection area.

Setup Options

Selecting J1939 Monitor Signals

5. Using the right arrow soft key will rotate through the selections in a clockwise rotation.

When finished with all screen signal selections press the exit (door symbol) soft key to return to previous menus.

6. Navigate back for more screen selections or press the Exit soft key 5 times to display current selections.

J1939 Monitor Controls

The following tables list the J1939 engine and transmission parameters that are available and can be monitored in the DP2xx Graphical Terminal.

For more information on setting up monitor controls in using the Engine Information Center, please refer to ***Selecting J1939 Signals*** on page 29.

J1939 Monitor Controls

Symbols

Signal monitor functions

Symbol	Name/Function	Units
	Actual Engine Torque	%
	Engine Air Inlet Temperature	Pa × 1000
	Engine Coolant Level	%
	Engine Coolant Pressure	Pa × 1000
	Engine Coolant Temperature	°C
	Engine Exhaust Gas Temperature	°C
	Engine Hours	Hours
	Engine Intake Manifold Temperature	°C
	Engine Oil Level	Max = 100, min = 0
	Engine Oil Pressure	Pa × 1000
	Engine Oil Temperature	°C
	Engine RPM	RPM
	Engine Turbocharger Boost Pressure	Pa × 1000
	Fuel Level	%
	Wheel-based Vehicle Speed	kph/mph

Symbol	Name/Function	Units
	Accelerator Pedal Position	%
	Alternator Current	Amp
	Alternator Voltage	Volts
	Auxiliary Temperature	°C
	Average Fuel Economy	km/l
	Trip Average Fuel Rate	l/h
	Barometric Pressure	Pa × 1000
	Current Gear	N/A
	Distance Remaining	Undefined
	Engine Air Filter Differential Pressure	Pa × 1000
	Engine Air Inlet Temperature	°C
	Engine Injector Metering Rail 1 Pressure	MPa
	Engine Injector Metering Rail 2 Pressure	MPa
	Engine Intercooler Temperature	°C
	Engine Turbocharger Oil Temperature	°C
	Fan Speed	%
	Engine Fuel Delivery Pressure	Pa × 1000
	Fuel Rate	l/h

Symbol	Name/Function	Units
	Fuel Remaining	%
	Engine Fuel Temperature 1	°C
	Instantaneous Fuel Economy	km/l
	Internal Voltage	Volts
	Net Battery Current	Amps
	Selected Gear	N/A
	Torque Convertor Lock-up Engaged	Conditional
	Total Distance	Variable
	Engine Total Fuel Used	Variable
	Transmission Input Shaft Speed	RPM
	Transmission Oil Pressure	Pa × 1000
	Transmission Oil Temperature	°C
	Transmission Output Shaft Speed	RPM
	Trip Distance	km
	Trip Engine Hours	hrs
	Trip Fuel	l
% Soot	Soot level percent	%
% Ash	Ash level percent	%

LED Indicators

Lamps

Particulate Filter Lamp

Stage 1 The right Amber LED indicates the initial need for regeneration. The lamp is on solid.

Stage 2 The right Amber LED indicates an urgent regeneration. Lamp flashes with 1 Hz.

Stage 3 Same as Stage 2 but check engine lamp will also turn on.

High Exhaust System Temperature Lamp

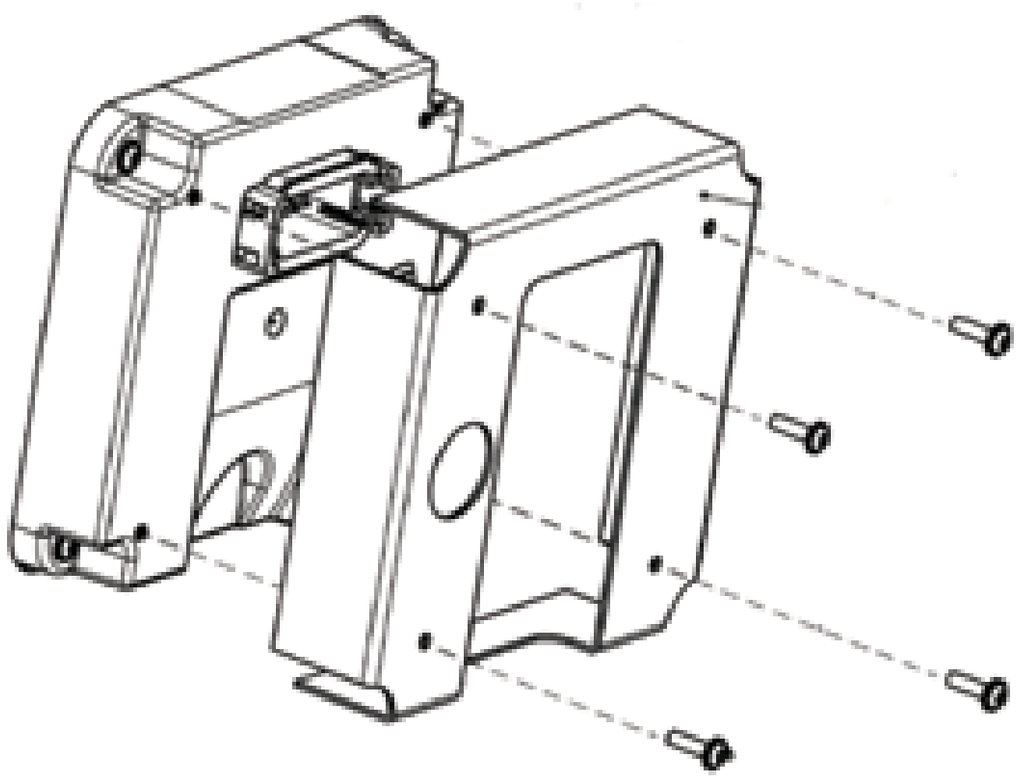
The left Amber LED indicates the increase of exhaust system temperature due to regeneration.

Regeneration Disabled Lamp

The left Amber LED indicates that the regeneration disabled switch is active.

Installation/Mounting Instructions

Panel Bracket Assembly



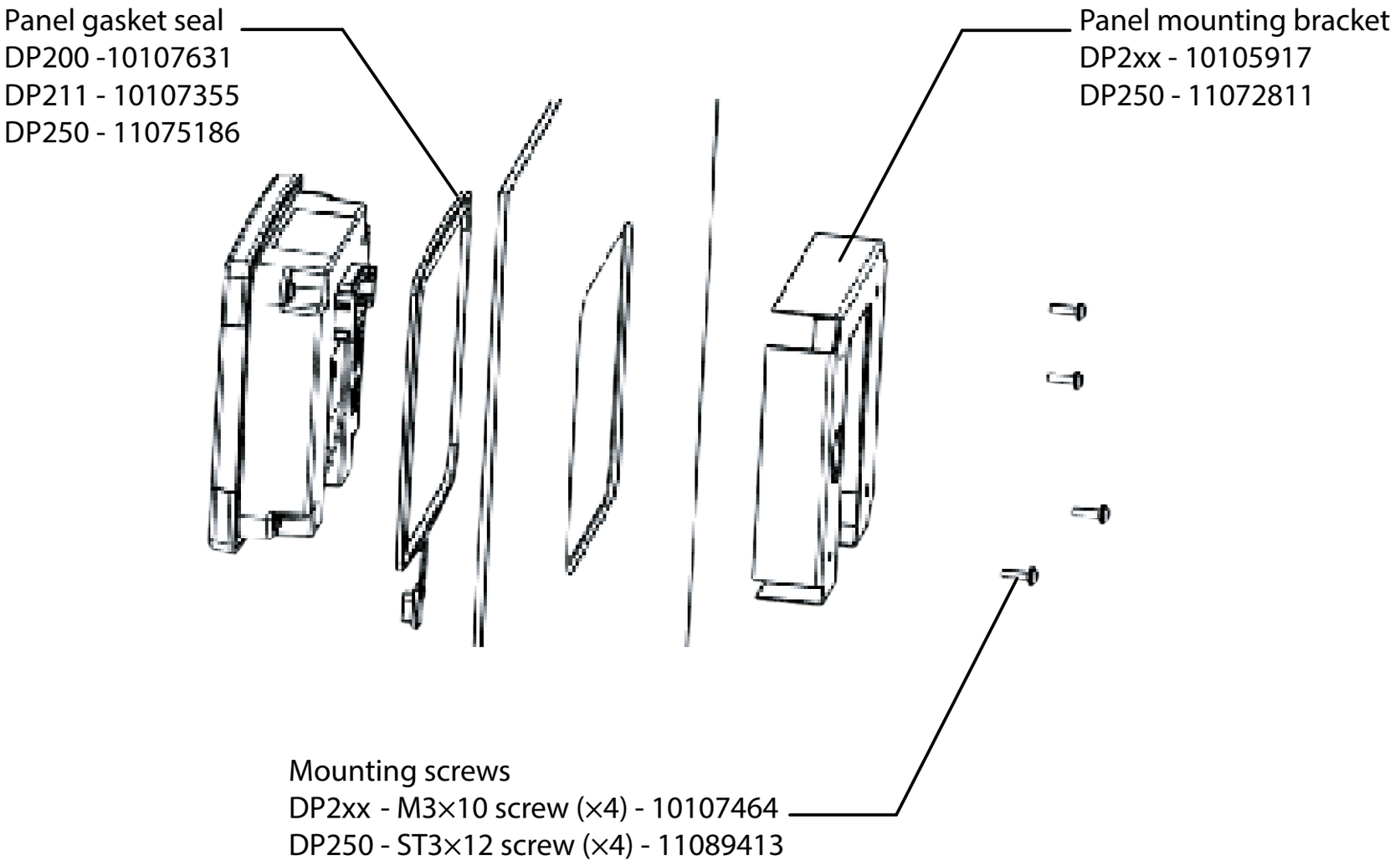
Mounting and fastening Installation

- Fastening hole depth: 11 mm
- May be threaded M3/ST3 and used with standard screws. Reassembly with self-tapping screws may damage existing threads in housing.
- Maximum torque: 0.9 Nm.

Ω Caution:
Excessive screw torque force may cause damage to housing.

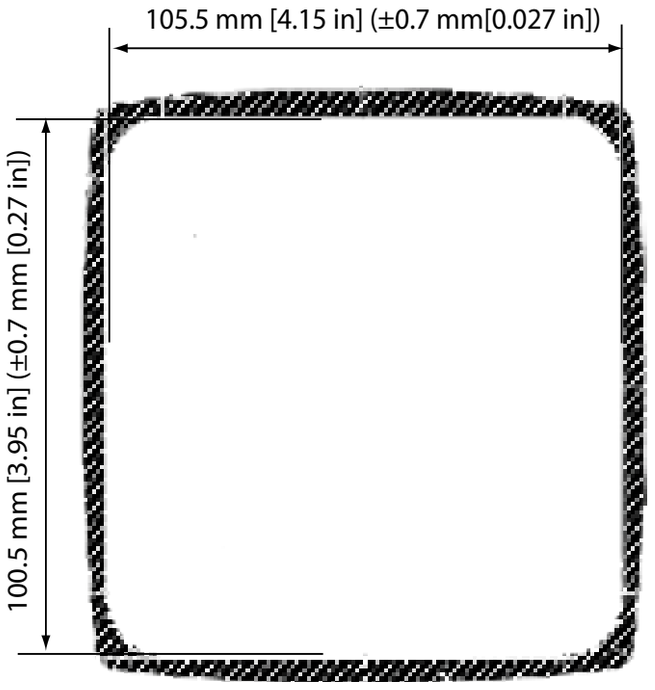
Installation/Mounting Instructions

Surface Mount



Installation/Mounting Instructions

Panel Gasket Dimensions



- Gasket seal area crosshatched
- Panel thickness: 2-5 mm
- Interior edges chamfered 0.2- 0.5 mm

DP200 Series Model Code Variants

A *Model Name*

DP200	Graphical Display, IP 67 above panel

B *Inputs/Outputs*

00	1 CAN port, 2 DIN/AIN
01	1 CAN port, 6 DIN/AIN
04	2 CAN ports, 2 DIN/AIN

C *Real Time Clock/ Low Temperature Functionality*

00	No RTC, full LTF
01	RTC and LTF

D *Flash Memory/Application Key*

02	2MB without Application Key
03	2MB with Application Key

E *Application Log*

00	None
04	4 MB

F *USB Port Type*

00	None
01	USB Device

DP211 Series Model Code Variants

A *Model Name*

DP211	Graphical Display with integrated USB port

B *Inputs/Outputs*

04	2 CAN ports, 2 multifunction

C *Real Time Clock/ Low Temperature Functionality*

01	RTC and LTF

D *Flash Memory/Application Key*

02	2MB without Application Key
03	2MB with Application Key

E *Application Log*

04	2 MB

F *USB Port Type*

01	USB Device

DP250 Series Model Code Variants

Model Name

DP250	Color Graphical Display

Inputs/Outputs (All models have 2 multifunction

00	1 CAN port
01	1 CAN port, 4 DIN/AIN
04	2 CAN ports
05	User Configurable 2 CAN, 2 DIN/AIN or 1 CAN port, 4 DIN/AIN
06	User Configurable: 1 RedCAN port, 1 CAN port or 1 RedCAN port, 2 DIN/AIN

Real Time Clock/ Low Temperature Functionality

00	No RTC and LTF
01	RTC and LTF

Flash Memory/Application Key

04	16 MB without Application Key
05	16 MB with Application Key

Application Log

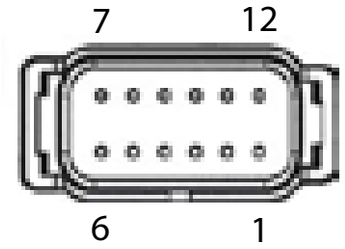
00	None
05	16 MB

USB Port Type

00	None
01	USB Device in front
02	USB Device in rear

Connection/Pinout settings

DP200 Series- Deutsch Connector

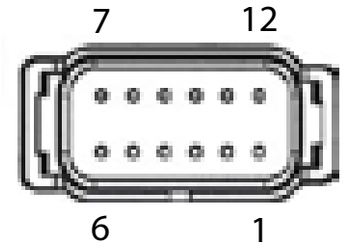


DP200 Series pin assignments

		Code B 00	Code B 01	Code B 04
1	Power ground–			
2	Power supply+			
3	CAN 0+			
4	CAN 0–			
5	AIN/ CAN Shield			
6	See Code B option	N/C	DIN/AIN	N/C
7	See Code B option	N/C	DIN/AIN	N/C
8	See Code B option	N/C	DIN/AIN	CAN 1+
9	See Code B option	N/C	DIN/AIN	CAN 1–
10	DIN/AIN/FREQ IN/CURRENT IN			
11	DIN/AIN/FREQ IN/CURRENT IN			
12	DOUT (0.5A)			

Connection/Pinout settings

DP250 Series- Deutsch Connector



DP250 Series pin assignments

1	Power ground-
2	Power supply+
3	CAN 0+
4	CAN 0–
5	AIN/ CAN Shield
6	See Code B option/TI
7	See Code B option/TI
8	See Code B option/TI
9	See Code B option/TI
10	DIN/AIN/FREQ IN/CURRENT IN, RHEOSTAT
11	DIN/AIN/FREQ IN/CURRENT IN, RHEOSTAT
12	DOUT (0.5A)

Connection/Pinout settings

Related Parts & Kits

DP200 Series Related Products Part Numbers

10100944	Deutsch Mating Connector Bag Assembly (20-24 AWG)
10102025	Deutsch Mating Connector Bag Assembly (16-20 AWG)

Electrical Connection Kits

10100944	12-pin Deutsch connection Kit
	Contents: *10100738 DTM06-12SA 12-pin Deutsch connector* *10100743 Deutsch terminal* *10100741 WM 12S locking plug*

Connection Tools

10100744	Deutsch stamped contacts terminal crimp tool, size 20
10100745	Deutsch solid contacts terminal crimp tool

Connection/Pinout settings

Related Parts & Kits (Continued)

DP200 Mounting Kit

10107354	DP200 Series Mounting Hardware Kit
	Contents: *10107464 Mounting screws (×4), M3 × 10* *10107631 Panel gasket seal* *10105917 Panel mounting bracket*

DP211 Mounting Kit

10107264	DP211 Series Mounting Hardware Kit
	Contents: *10107464 Mounting screws (×4), M3 × 10* *10107355 Panel gasket seal* *10105917 Panel mounting bracket*

DP250 Mounting Kit

11079236	DP250 Series Mounting Hardware Kit
	Contents: *11089413 Mounting screws (×4), ST3 × 12* *11075786 Panel gasket seal* *11072811 Panel mounting bracket*

Connection/Pinout settings
Related Parts & Kits (Continued)

Software

10101000	PLUS+1 GUIDE Software Application (including Service Tool and Screen Editor)

Ω Important Safety Information

- Disconnect your machine's battery power before connecting power and signal cables to the DP2xx.
- Before doing any electrical welding on your machine, disconnect all power and signal cable cables connected to the DP2xx.
- Do not exceed the DP2xx power supply voltage ratings. Using higher voltages may damage the DP2xx and can create a fire or electrical shock hazard.
- Do not use or store the DP2xx where flammable gases or chemicals are present.
- Using or storing the DP2xx where flammable gases or chemicals are present may cause an explosion.
- Software configures the keypad buttons on the DP2xx. Do not use these buttons to implement critical safety features. Use separate mechanical switches to implement critical safety features such as emergency stops.
- Design systems that use the DP2xx so that a communication error or failure between the DP2xx and other units cannot cause a malfunction that might injure people or damage material.
- The protective glass over the DP2xx display screen will break if hit with a hard or heavy object. Install the DP2xx to reduce the possibility of it being hit by hard or heavy objects.
- If you break the protective glass of the DP2xx screen, remove the DP2xx and immediately return it to Danfoss for service.
- Storing or operating a DP2xx in an environment that exceeds the DP2xx specified temperature or humidity rating may damage the DP2xx.
- Always clean the DP2xx with a soft, damp cloth. Use a mild dishwashing detergent as needed.
- The DP2xx is not user serviceable. Return the DP2xx to the factory in case of failure.

ENGINEERING
TOMORROW

Products we offer:

- Bent Axis Motors
- Closed Circuit Axial Piston Pumps and Motors
- Displays
- Electrohydraulic Power Steering
- Electrohydraulics
- Hydraulic Power Steering
- Integrated Systems
- Joysticks and Control Handles
- Microcontrollers and Software
- Open Circuit Axial Piston Pumps
- Orbital Motors
- PLUS+1® GUIDE
- Proportional Valves
- Sensors
- Steering
- Transit Mixer Drives

Danfoss Power Solutions is a global manufacturer and supplier of high-quality hydraulic and electronic components. We specialize in providing state-of-the-art technology and solutions that excel in the harsh operating conditions of the mobile off-highway market. Building on our extensive applications expertise, we work closely with our customers to ensure exceptional performance for a broad range of off-highway vehicles.

We help OEMs around the world speed up system development, reduce costs and bring vehicles to market faster.
Danfoss – Your Strongest Partner in Mobile Hydraulics.

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